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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/020,964	12/19/2001	Kyujin Jung	4459-014A	1168

7590

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EXAMINER

NGUYEN, KHIEM D

ART UNIT

PAPER NUMBER

2823

DATE MAILED: 04/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/020,964

Applicant(s)

JUNG ET AL.

Examiner

Khiem D Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 5-9 and 14-18 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 5-9 and 14-18 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claims 5, 6, 9, 14, 15 and 18 are rejected under 35 U.S.C. 102(e) as being anticipated by Coffman (U.S. Patent 6,451,627).

Coffman disclose a method of making a low-pin-count chip package comprising the steps of (FIGS. 1-17 and related text):

providing a sheet carrier 126;

laminating a metal layer 124 on the sheet carrier;

half-etching the metal layer so as to form concavities at the predetermined positions thereof (col. 5, line 56 to col. 6, line 13 and FIG. 14);

forming a photoresist layer 32 on the metal layer (col. 2, line 59 to col. 3, line 20);

half-removing the photoresist layer such that only photoresist within the concavities is left;

forming a metal coating 31 on the surface of the metal layer which is not covered by the photoresist wherein the metal coating comprises a layer of nickel covering the

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surface of the metal layer which is not covered by the photoresist, and a layer of metal selected from the group consisted of gold and palladium covering the nickel layer (col. 3, lines 2-6);

stripping the photoresist within the concavities;

etching the metal layer so as to form a plurality of connection pads 142 having a "substantially" concave profile (col. 5, line 66 to col. 6, line 4 and FIG. 14);

attaching a semiconductor chip 144 onto the die pad 138 on the sheet carrier (col. 6, lines 14-15 and FIGS. 15-16);

electrically coupling the semiconductor chip to the connection pads (col. 6, lines 15-19);

forming a package body 148 over the semiconductor chip and the connection pads wherein the substantially concave profile helps to lock the connection pads in the package body (col. 6, lines 21-26 and FIG. 16);

removing the sheet carrier; and

forming a protective metal flash 152 on the lower surface of the connection pads exposed from the package body (col. 6, lines 28-38 and FIG. 17).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 7, 8, 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Coffman (U.S. Patent 6,451,627) as applied to claims 5, 6, 9, 14, 15 and 18 above, and further in view of Bernier et al. (U.S. Patent 6,251,707) and Bunyan (U.S. Pub. 2002/0012762).

Coffman fails to teach wherein the sheet carrier is a polyimide tape with a layer of silicone adhesive as recited in present claims 7 and 16.

Bernier disclose wherein the sheet carrier is a polyimide tape with a layer of silicone adhesive (col. 2, lines 30-41). It would have been obvious to one of ordinary skill in the art of making semiconductor devices to combine the teaching of Coffman and Bernier to enable the sheet carrier of Coffman to be formed and furthermore to increase the heat conduction from the chip and thus minimize chip temperature (col. 2, lines 40-41).

Neither Coffman nor Bernier discloses wherein the sheet carrier is a polyester tape with a layer of silicone adhesive as recited in present claims 8 and 17.

Bunyan discloses wherein the sheet carrier is a polyester tape with a layer of silicone adhesive (page 3, paragraph [0034]). It would have been obvious to one of ordinary skill in the art of making semiconductor devices to combine the teaching of Coffman and Bunyan to enable the sheet carrier of Coffman to be formed.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khiem D Nguyen whose telephone number is (703) 306-0210. The examiner can normally be reached on Monday-Friday (8:00 AM - 5:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chaudhuri Olik can be reached on (703) 306-2794. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-9179 for regular communications and (703) 746-9179 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

K.N.
April 2, 2003


Olik Chaudhuri
Supervisory Patent Examiner
Technology Center 2800